

Background and aims B-type natriuretic peptide (BNP) and N-terminal-pro-BNP (NTproBNP) have been shown to correlate with the size of patent ductus arteriosus (PDA) in preterm infants. We investigated whether BNP or NTproBNP is more accurate for assessment of a PDA.

Methods Prospective observational study. Preterm infants born.

Results 60 infants were recruited, 58 had complete datasets. The cohort's mean (SD) gestational age was 27³ (2²) weeks and had a mean (SD) birth weight of 1032 (315) grams. 46 (79.3%) infants had a PDA with a mean (SD) PDA diameter of 3.2 (0.9) mm. Median (IQR) BNP levels: 486.5 (219–1316) pg/ml for infants with PDA, 190 (95.5–514.5) pg/ml for infants without PDA. Median (IQR) NTproBNP levels: 10858.5 (6319–42108) pg/ml for infants with PDA, and 7488 (3363–14227.5) pg/ml for infants without PDA. Both BNP and NTproBNP showed a significant correlation with PDA size in this cohort: BNP R=0.35 (p = 0.0066); NTproBNP R = 0.31 (p = 0.018).

Conclusion BNP and NTproBNP were closely correlated to PDA size. Both markers were useful for assessment of PDA size in this cohort of very preterm infants.

0-032 SEROTONIN IS A SELECTIVE VASOCONSTRICTOR OF CHICKEN EMBRYO DUCTUS ARTERIOSUS

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Introduction Decreased platelet number and/or function have been related to patent ductus arteriosus (DA). Activated platelets release vasoactive products, including serotonin (5-HT) that might be relevant for DA homeostasis DA. The chicken embryo has emerged as a suitable model for the study of DA vascular biology. In the present study, we investigated the possible vasoactive role of 5-HT in the chicken DA.

Methods Rings of the DA of 15- to 20-d-old chicken embryos (total incubation time 21-d) were studied in a wire myograph. The response to 5-HT was investigated under different O₂ tensions (3, 7, and 74 kPa). The responses to the 5-HT_{1B/D} receptor agonist sumatriptan, the 5-HT_{2A/B/C} receptor agonist DOI and the selective serotonin reuptake inhibitors fluoxetine and sertraline were also investigated.

Results 5-HT (10 nM–0.3 mM) contracted the pulmonary side of the DA (PulmDA) in a concentration-dependent manner. By contrast, 5-HT induced negligible contractions in the vessels that surround the PulmDA (i.e., the pre- and post-ductal pulmonary arteries, and the aortic side of the DA). 5-HT-induced contraction increased with development (15-d >17-d >19-d=20-d). O₂ tension did not affect 5-HT-induced contraction but elimination of extracellular calcium completely abolished it. Sumatriptan and DOI also contracted the PulmDA in a concentration-dependent manner. By contrast, fluoxetine and sertraline evoked contractions at very high concentrations (>0.1 mM).

Conclusions Our data indicate that 5-HT receptors are functionally present in the chicken DA and suggest that platelet-derived 5-HT may play a pivotal role in the postnatal closure of the DA.

Abstract 0-033 Table 1 Clinical outcomes

		Rate (%)	p-value*	OR (CI95%)
Survival-without-morbidity	P2	53.4	NS	1.34(0.70–2.57)†
	P1	46		
Mortality	P2	18.2	NS	1.05(0.45–2.45)
	P1	17.5		
Chronic lung disease	P2	12.5	<0.05	0.39(0.15–0.98)
	P1	26.9		
Retinopathy (≥3)	P2	12	NS	1.31(0.41–4.15)
	P1	9.4		
Necrotizing enterocolitis	P2	5.1	<0.05	0.28(0.08–0.96)
	P1	16.1		
Intraventricular haemorrhage (≥3)	P2	25	NS	0.90(0.43–1.88)
	P1	27		

P1 aggressive, P2 conservative

*Chi-square

†Adjusted for gestational age, sepsis and days on mechanical ventilation (logistic regression).

0-033 CONSERVATIVE APPROACH TO PATENT DUCTUS ARTERIOSUS IN VERY LOW BIRTH WEIGHT INFANTS

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Background and aims Management of patent ductus arteriosus (PDA) is still a dilemma. We aimed to prove that a more conservative approach of PDA is equally effective without increasing morbidity-mortality in preterm infants.

Methods From January 2009 to December 2013 clinical charts of preterm <31 weeks admitted into two NICUs with clinical/echocardiographic PDA were analysed. In January 2011 management was changed. In the first period (P1), patients who failed medical treatment underwent surgical ligation; in the second (P2), only those with cardiopulmonary compromise (mainly those that could not be weaned from ventilator). We compared survival-without-morbidity, defined as patients discharged without chronic lung disease, severe retinopathy, necrotizing enterocolitis or severe intraventricular haemorrhage.

Results Patients in P1 (n = 63) and P2 (n = 88) had similar clinical characteristics. Significant lower rates of medical (85.7% vs 56.8%) and surgical treatment (33.9% vs 14.3%) were observed in P2. No differences in survival-without-morbidity were observed (Table 1). In P2, 19.4% patients showed PDA at discharge.

Conclusions A conservative approach in preterm with PDA can avoid medical/surgical treatment and its side effects, without changes in survival-without-morbidity.

0-034 HALF SYSTOLIC DECAY TIME (½SDT) OF DUCTAL FLOW MEASURED BY ECHOCARDIOGRAPHY WOULD PREDICT NEED FOR TREATMENT OF PATENT DUCTUS ARTERIOSUS (PDA) IN EXTREMELY PREMATURE NEONATE

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Aim To evaluate the utility of half systolic decay time ($\frac{1}{2}$ SDT) of ductal flow measured by Doppler echocardiography in predicting PDA treatment in extremely premature babies.

Methods We prospectively recruited babies ≤ 30 weeks gestation. We performed serial echocardiograms (< 48 hr of life [scan1], day 7 [scan2], week 2 [scan3], week 3 [scan4], week 4 [scan5]). In babies with PDA, we measured the time needed to halve peak systolic velocity ($\frac{1}{2}$ SDT) across the duct using continuous wave Doppler. The clinical team was blinded to the research assessment.

Results A total of 48 babies were recruited to the study over a one-year period. Median gestational age was 26 weeks (range 23–29) and mean birth weight (\pm SD) was 909g (± 295). Seven babies (14%) were treated for PDA, including two needing surgical ligation. The $\frac{1}{2}$ SDT measured on scan2, was significantly shorter in the treated babies ($p = 0.0172$). In this study population $\frac{1}{2}$ SDT < 90 ms measured on day 7 (scan2) was 100% specific in predicting need for PDA treatment. The parameter had a positive predictive value of 100% with sensitivity of 62.5%. The negative predictive value was 88% with diagnostic accuracy of 90%.

Conclusion In this population at our centre, all babies < 30 weeks gestation with $\frac{1}{2}$ SDT < 90 ms on day 7 of life were treated for PDA by clinicians blinded to this assessment. We believe that $\frac{1}{2}$ SDT warrants further investigation as an early marker for targeting PDA treatment in extremely preterm babies.

Developmental Neurology

0-035

THE CHARACTERISTICS OF CHILDREN IDENTIFIED WITH PARENT REPORTED DIAGNOSED DEVELOPMENTAL DIFFICULTIES SCREENED AS PART OF AN AUTISM PREVALENCE STUDY

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Background and aims A protocol was developed to screen 7,951 children 6–11 years for Autism Spectrum Disorders (ASDs) enrolled at national schools in three regions (Galway, Waterford and Cork) in the Republic of Ireland.

Methods A study booklet completed by parents of eligible children, including: demographics, developmental history, and a screening instrument, Social Communication Questionnaire – Lifetime Form (SCQ: Rutter *et al.*, 2003).

Results Study booklets were primarily completed by children’s mothers 4,474, 86%. Thirteen percent 694 of primary caregivers reported developmental disorders. Of these 411, 59% had been diagnosed, 245, 35% undiagnosed 38, 5% or on a waiting list for assessment. Sixty six percent, 234 of these children’s parents expressed developmental concerns on or before the child’s fourth birthday.

Awareness of developmental difficulties during early childhood was highest among the parents of children with a diagnosis of: ASD 48, 89%; Dyspraxia 48, 77%; ADHD 30, 71%. Significant differences in parental awareness were not observed for study children’s gender or age group. Neither was maternal awareness of difficulties in their child’s development and behaviour related to their level of education, social class, ethnic or cultural background or nationality.

Conclusions Excluding developmental difficulties diagnosed at birth maternal concerns relating to children’s development was highest for children with a diagnosis of Autism Spectrum Disorders on or before the child’s fourth birthday. This is an important finding given that almost $\frac{1}{2}$ of SCQ questions relate to children’s development at 4–5 years of age.

0-036

HEARING LOSS BY WEEK OF GESTATION AND CATEGORIES OF BIRTH WEIGHT IN VERY PRETERM NEONATES: A POPULATION-BASED STUDY

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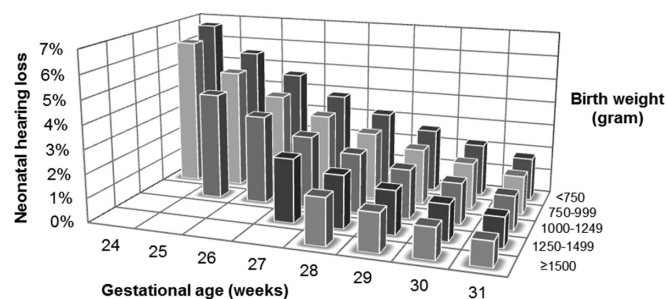
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Background and aims Studies have shown an association between Neonatal hearing loss (NHL) and preterm birth and low birth weight, but the prevalence of NHL more specific within these categories is not known. Aim of this study is to present the risk of NHL by week of gestation and categories of birth weight in an nationwide cohort of neonates born < 32 weeks of gestation

Methods Results of the two-stage Automated Auditory Brainstem Response (AABR) Universal Newborn Hearing Screening Program in Dutch neonatal intensive care units and diagnostic examination were centrally registered between October 1998 and December 2012 and included in this study. NHL was defined as impaired when the neonates’ conventional Auditory Brainstem Response (ABR) level exceeded 35 dB in one (unilateral) or two (bilateral) ears at diagnostic examination. Birth weight was stratified into < 750 g, 750–999 g, 1000–1249 g, 1250–1499 g, and ≥ 1500 g.

Results In total 18,564 neonates with a gestational age between 24.0 and 31.9 weeks were eligible for this study. Logistic regression analyses revealed significant associations between gestational age, birth weight and both unilateral and bilateral NHL (all $p < 0.002$). Gestational age ($p < 0.001$) and birth weight ($p < 0.01$) were both independent risk indicators of total NHL, and associated with NHL in a dose-response relationship. The prevalence of NHL consistently increased with decreasing week of gestation (1.2% to 7.5% from 31 to 24 weeks) and decreasing birth weight (1.4% to 4.8% from ≥ 1500 g to < 750 g).

Conclusions Gestational age and birth weight are independently associated with NHL in a dose-response relationship. This information can be used to gain insight into health and related costs associated with very preterm births.



Abstract 0-036 Figure 1